

In The Claims:

1. (Amended) A control system for an automotive vehicle having a vehicle body comprising:

A1  
a first angular rate sensor generating a first angular rate signal corresponding to a first angular motion of the vehicle body;

a second angular rate sensor generating a second angular rate signal corresponding to a second angular motion of the vehicle body;

a lateral accelerometer generating a lateral acceleration signal corresponding to a lateral acceleration of a center of gravity of the vehicle body;

a longitudinal accelerometer generating a longitudinal acceleration signal corresponding to the longitudinal acceleration of the center of gravity of the vehicle body;

a wheel speed sensor generating a wheel speed signal corresponding to a wheel speed of the vehicle; and

a controller coupled to said first angular rate sensor, said second angular rate sensor, said lateral accelerometer, said longitudinal accelerometer, and said wheel speed sensor, said controller determining a roll gradient based upon a past raw roll rate and current raw roll rate, the first angular rate signal or the second angular rate signal and the lateral acceleration signal, a pitch gradient based upon a past raw pitch rate and current raw pitch rate, the first or second angular rate signal and the longitudinal acceleration signal, determining a relative roll and relative pitch as a function of the roll gradient and the pitch gradient.

3. (Amended) A control system for an automotive vehicle having a vehicle body comprising:

A2  
Cont.  
a roll angular rate sensor generating a roll angular rate signal corresponding to a roll angular motion of the vehicle body;

a yaw angular rate sensor generating a yaw motion signal corresponding to a yaw motion of the vehicle body;

a lateral accelerometer generating a lateral acceleration signal corresponding to a lateral acceleration of a center of gravity of the vehicle body;

a longitudinal accelerometer generating a longitudinal acceleration signal corresponding to the longitudinal acceleration of the center of gravity of the vehicle body;

a wheel speed sensor generating a wheel speed signal corresponding to a wheel speed of the vehicle; and

A<sup>2</sup>  
Concld.  
a controller coupled to said roll angular rate sensor, said yaw angular rate sensor, said lateral accelerometer, said longitudinal accelerometer, and said wheel speed sensor, said controller determining a pitch rate in response to said roll angular rate signal, said yaw motion signal, said lateral acceleration signal, said longitudinal acceleration signal, and said wheel speed signal, said controller determining a roll gradient based upon a past raw roll rate and current raw roll rate, the roll angular rate signal and the lateral acceleration signal; a pitch gradient based upon a past raw pitch rate and current raw pitch rate, the calculated pitch angular rate signal and the longitudinal acceleration signal, determining a relative roll and relative pitch as a function of the roll gradient and the pitch gradient.

4. (Amended) A control system as recited in claim 3 further comprising a safety system coupled to said controller, said controller generating a control signal to said safety system in response to said relative roll angle, the relative pitch angle, a global roll attitude and a global pitch attitude.